

Dean L. Engelhardt, et al., Serial No.: 08/479,997 (Filed June 7, 1995)  
Page 27 [Supplemental Amendment To Applicants' September 3, 2004  
Amendment Under 37 C.F.R. §1.116 – December 28, 2004]

### **REMARKS**

After entry of the complete listing of the claims provided above:<sup>1</sup>

**Claims presently pending:** Claims 956-961, 964-968, 970-976, 978-993, 996-1000, 1002-1009, 1011-1027, 1030-1034, 1036-1042, 1044-1059, 1062-1066, 1068-1075 and 1077-1087.

**Claims presently amended:** Claims 956, 972, 985, 987-988, 1005, 1008, 1018, 1020, 1022, 1038, 1051, 1053-1054, 1071, 1084 and 1086.

**Claims presently canceled:** Claims 1-955, 962-963, 969, 977, 994-995, 1001, 1010, 1028-1029, 1035, 1043, 1060-1061, 1067, 1076 and 1088-1227.

**Claims presently added:** None.

Entry of the above claim listing and claim amendments is respectfully requested.

Applicants wish to thank Examiner Ardin H. Marschel, Ph.D and Supervisory Patent Examiner (SPE) Michael Woodward, Ph.D, for the courtesy and time that they extended to Applicants' undersigned attorney and their two legal representatives, Eugene C. Rzucidlo, Esq. and Robert M. Schulman, Esq., in the December 16, 2004 interview held at the U.S. Patent Office. The filing of this paper follows the substance of that interview.

---

<sup>1</sup> In drafting the complete listing of the claims, Applicants' attorney paid careful attention to using the proper claim amending status identifiers. Thus, only the descriptions "Currently Amended," "Previously Presented," and "Canceled" have been used in the complete listing of claims above.

Enz-5(D6)(C2)

Dean L. Engelhardt, et al., Serial No.: 08/479,997 (Filed June 7, 1996)

Page 28 [Supplemental Amendment To Applicants' September 3, 2004

Amendment Under 37 C.F.R. §1.116 -- December 28, 2004]

# **I. Summary of December 16, 2004 Interview**

## **A. Non-entry of the claim amendments presented September 3, 2004**

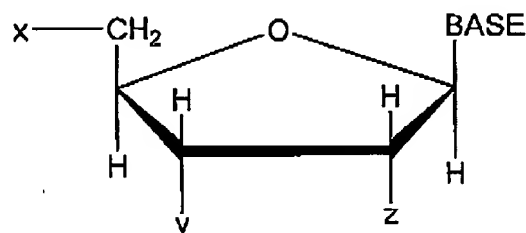
The Examiners and Applicants' attorney and representatives discussed the non-entry of amendments presented in Applicants' September 3, 2004 Amendment Under 37 C.F.R. §1.116. Applicants' attorney noted that there were seven issues raised in the November 29, 2004 Advisory Action, one of which dealt with improper claim amending status identifiers.

## **B. Entry of possible claim amendments to overcome the rejections of record.**

Applicants' representatives suggested that the subject matter of claim 988<sup>2</sup>

<sup>2</sup> Claim 988 was first presented in Applicants' April 23, 2004 Amendment Under 37 C.F.R. §1.115, and it recites individual species of a non-radioactive Sig label moiety which are attached to the phosphate(s) of an oligo- or polynucleotide. The text of claim 988 as presented in Applicants' April 23, 2004 Amendment is provided below:

An oligo- or polynucleotide which is complementary to a nucleic acid of interest or a portion thereof, said oligo- or polynucleotide comprising at least one modified nucleotide or a modified nucleotide analog having the structural formula:



wherein BASE is a moiety comprising a pyrimidine, a pyrimidine analog, a purine, a purine analog, a deazapurine or a deazapurine analog, wherein said analog, can be attached to or coupled to or incorporated into DNA or RNA, wherein said analog does not substantially interfere with double helix formation or nucleic acid hybridization, and wherein said BASE is attached to the 1' position of the furanosyl ring from the N1 position when said BASE is a pyrimidine or a pyrimidine analog, or from the N9 position when said BASE is a purine, a purine analog, a deazapurine or a deazapurine analog;

wherein x comprises H—, HO—, a mono-phosphate, a di-phosphate or a tri-phosphate;

wherein y comprises H—, HO—, a mono-phosphate, a di-phosphate or a tri-phosphate;

wherein z comprises H—, HO—, a mono-phosphate, a di-phosphate or a tri-phosphate; and

wherein Sig is covalently attached directly or through a chemical linkage to at least one phosphate comprising x, y, z, or a combination thereof, and wherein said Sig comprises a non-polypeptide, non-nucleotidyl, non-radioactive label moiety which can be directly or indirectly detected when attached to said phosphate or when said modified nucleotide is incorporated into said oligo- or polynucleotide or when said oligo- or polynucleotide is hybridized to said complementary nucleic acid of interest or a portion thereof, wherein Sig comprises biotin, iminobiotin, an electron dense component, a magnetic component, a metal-containing component, a fluorescent component, a chemiluminescent component, a chromogenic component, a saccharide component or a combination of any of the foregoing.

Enz-5(D6)(C2)

Dean L. Engelhardt, et al., Serial No.: 08/479,997 (Filed June 7, 1995)

Page 29 [Supplemental Amendment To Applicants' September 3, 2004

Amendment Under 37 C.F.R. §1.116 -- December 28, 2004]

was allowable in light of the rejections of record. After some discussion, the Examiners suggested some amendments to claim 988 and indicated that such amendments could be presented in a supplemental paper. Applicants' attorney and representatives offered to amend claim 988 and related claims to adopt the Examiners' suggestions.

Other pending claims in this application were also discussed, but no consensus was reached as to possible amendments to overcome the rejections of record.

## **II. Claim Amendments**

As amended above, claims 956-961, 964-968, 970-976, 978-993, 996-1000, 1002-1009, 1011-1027, 1030-1034, 1036-1042, 1044-1059, 1062-1066, 1068-1075 and 1077-1087 are presented in this paper. All other previously pending claims have been canceled without prejudice or disclaimer to Applicants' rights thereto.

### ***Claims 956-987***

Several changes have been made to claim 956 in light of the December 16, 2004 interview. These changes include the deletion of the phrase "and wherein said Sig comprises a non-polypeptide, non-nucleotidyl, non-radioactive label moiety which can be directly or indirectly detected when attached to PM or when said modified nucleotide is incorporated into said oligo- or polynucleotide or when said oligo- or polynucleotide is hybridized to said complementary nucleic acid of interest or a portion thereof." Furthermore, the term "sugar" has been changed to "furanosyl." Among the individual species of Sig, the "saccharide component" has

**Enz-5(D6)(C2)**

been deleted. Finally, a typographical error in the spelling of "into" [inot] (line 9) has also been corrected.

To conform with amended claim 956, claims 962-963 and 977, which recited a "saccharide component," have been canceled. Also canceled is claim 969 which formerly recited "a glycosidic linkage moiety."

A minor change has also been made to claim 972 where the term "furanosyl" has been changed to "PM" [phosphate moiety].

Finally, with respect to claims that depend from claim 956, claims 985 and 987 have been amended to overcome the vagueness and indefiniteness rejection of both claims as set forth in the July 14, 2004 Office Action. These rejections relate to the "deoxy-type oligomers or polydeoxyribonucleotides vs. dependent claims requiring a ribonucleotide." It was indicated in the November 29, 2004 Advisory Action (page 7) that the September 3, 2004 amendments to these and similarly worded dependent claims would have overcome this basis for rejection if the proposed amendment had been entered.

#### ***Claims 988-1021***

Claim 988 was specifically discussed at the December 16, 2004 interview and the text of that claim is presented above in light of the discussions.

As with claim 956, the phrase "wherein said Sig comprises a non-polypeptide, non-nucleotidyl, non-radioactive label moiety which can be directly or indirectly detected when attached to said phosphate or when said modified nucleotide is incorporated into said oligo- or polynucleotide or when said oligo- or polynucleotide is hybridized to said complementary nucleic acid of interest or a portion thereof" has been deleted in claim 988. Also deleted from claim 988 is the recitation of "a saccharide component." An inadvertent comma in the third line following the structural formula in claim 988 has also been deleted, so that the

**Enz-5(D6)(C2)**

Dean L. Engelhardt, et al., Serial No.: 08/479,997 (Filed June 7, 1995)

Page 31 [Supplemental Amendment To Applicants' September 3, 2004

Amendment Under 37 C.F.R. §1.116 -- December 28, 2004]

phrase "wherein said analog, can be attached to or coupled to or incorporated into DNA or RNA" reads without the comma after "wherein said analog."

Dependent claims 994-995 and 1010 have been canceled in light of the deletion of "saccharide component" from claim 988. Also canceled is claim 1001 which had previously recited "a glycosidic linkage moiety." Claim 1005 has been amended to change the term "furanosyl" to "phosphate" moiety. A minor error in the spelling of "comprises" has been corrected in claim 1008.

Lastly, dependent claims 1018 and 1020 have been amended to overcome the vagueness and indefiniteness rejection related to "deoxy-type oligomers."

#### **1022-1053**

As presented above, claim 1022 recites individual species for Sig with the additional proviso regarding the attachment of Sig through a chemical linkage to a terminal phosphate moiety.

The phrase "and wherein said Sig comprises a non-polypeptide, non-nucleotidyl, non-radioactive label moiety which can be directly or indirectly detected when attached to PM or when said modified nucleotide is incorporated into said oligo- or polynucleotide, or when said oligo- or polynucleotide is hybridized to said complementary nucleic acid of interest or a portion thereof" has been deleted. Also deleted is "saccharide component" as a species for Sig.

Dependent claims 1028-1029 and 1043, which relate to the "saccharide component," have been canceled. Also canceled is claim 1035 which formerly recited "a glycosidic linkage moiety."

Claim 1038 has been amended to replace the term "furanosyl" with "PM".

Finally, dependent claims 1051 and 1053 have been amended to overcome the vagueness and indefiniteness rejection related to "deoxy-type oligomers."

**Enz-5(D6)(C2)**

Dean L. Engelhardt, et al., Serial No.: 08/479,997 (Filed June 7, 1995)

Page 32 [Supplemental Amendment To Applicants' September 3, 2004

Amendment Under 37 C.F.R. §1.116 -- December 28, 2004]

### **1054-1087**

Changes to claim 1054 include the deletion of the phrase "and wherein said Sig comprises a non-polypeptide, non-nucleotidyl, non-radioactive label moiety which can be directly or indirectly detected when so attached to said phosphate or when said modified nucleotide is incorporated into said oligo- or polynucleotide, or when said oligo- or polynucleotide is hybridized to said complementary nucleic acid of interest or a portion thereof." Also deleted is "saccharide component" from the members recited for Sig.

Additionally, the designation "y" was inadvertently deleted in line 11 following the structural formula. This designation has now been restored in the listing of claim 1054 above. Minor corrections have also been made to "x," "y," and "z" with respect to the inadvertent inclusion of the word "of." Thus, claim 1054 formerly recited, in part, "wherein x comprises of H— , HO— , a mono-phosphate, a di-phosphate or a tri-phosphate." The word "of" has now been deleted after "comprises" in claim 1054.

Claims 1060-1061 have been canceled in light of the deletion of the "saccharide component" from claim 1054. Also canceled is claim 1067 which formerly recited "a glycosidic linkage moiety."

In claim 1071, the term "phosphate" has been substituted for "furanosyl."

Lastly, dependent claims 1084 and 1086 were both amended to address and overcome the vagueness and indefiniteness rejection related to "deoxy-type oligomers."

It is believed that the above presentation of claims 956-961, 964-968, 970-976, 978-993, 996-1000, 1002-1009, 1011-1027, 1030-1034, 1036-1042, 1044-1059, 1062-1066, 1068-1075 and 1077-1087 adopts the substance of the suggestions that were made during the December 16, 2004 interview.

**Enz-5(D6)(C2)**

Dean L. Engelhardt, et al., Serial No.: 08/479,997 (Filed June 7, 1995)

Page 33 [Supplemental Amendment To Applicants' September 3, 2004

Amendment Under 37 C.F.R. §1.116 -- December 28, 2004]

As to the November 29, 2004 Advisory Action, the following issues had been raised:

ISSUE NO.	REJECTION	ADVISORY ACTION PAGE NO.	REJECTED CLAIMS	BRIEF DESCRIPTION OF REJECTION
1	NEW MATTER & VAGUE/INDEF	PAGE 2, 2ND FULL ¶	856,888,921,956, 988,1022,1054, 1088,1121,1156 & 1191 & DEPT. CLAIMS	[Sig] comprising at least 3 C atoms
2	NEW MATTER & VAGUE/INDEF	PAGE 2, 3RD ¶, THRU PAGE 3, 1ST ¶	856,888,921,956, 988,1022,1054, 1088,1121,1156 & 1191 & DEPT. CLAIMS	or modified nucleotide analog
3	NEW MATTER /REQ. FURTHER CONSID AND/OR SEARCH	PAGE 3, 1ST FULL ¶	NUMEROUS CLAIMS INCL. CLAIM 829	improper claim amending status modifiers, e.g., Previously Added
4	DOES NOT PLACE APPL. IN ALLOWABLE CONDITION	PAGE 3, LAST TWO ¶S, THRU PAGE 6, PENULT. ¶	826-1227	non-nucleotidyl
5	VAGUE/INDEF.	PAGE 7, 1ST ¶	855,886,920,955, 987,1020,1053, 1086,1120,1154, 1188 & 1125	deoxy-type oligomers
6	ENABLEMENT	PAGE 7, 2ND ¶	956-987	furanosyl
7	ANTICIPATION	PAGE 7, 3RD ¶	See footnote <sup>3</sup>	Hartman et al.

<sup>3</sup> The claims rejected in the July 14, 2004 Office Action for anticipation by Hartman et al. included claims 888, 890, 903, 905, 907, 911, 919, 921, 923, 930, 931, 936, 937-939, 941, 943, 945, 951, 954, 956, 964, 965, 971, 972, 974, 978, 986, 988, 996, 997, 1002-1005, 1007, 1010, 1011, 1019, 1022, 1031, 1036-1038, 1043, 1044, 1052, 1054, 1062, 1063, 1068-1071, 1073, 1075, 1077, 1085, 1156, 1158, 1165, 1166, 1171-1173, 1175, 1177-1179, 1187, 1191, 1193, 1200, 1201, 1206-1208, 1121, 1214, 1215, 1221 and 1224.

Enz-5(D6)(C2)

Dean L. Engelhardt, et al., Serial No.: 08/479,997 (Filed June 7, 1995)

Page 34 [Supplemental Amendment To Applicants' September 3, 2004

Amendment Under 37 C.F.R. §1.116 -- December 28, 2004]

With respect to the seven issues set forth in the November 29, 2004 Advisory Action and listed in the above table, they are believed to have been rendered moot by the presentation of the claim amendments in this paper. In further detail:

The issue regarding "Sig comprising at least three carbon atoms" (Issue No. 1) is believed to have been mooted by maintaining this language in the various dependent claims (957, 989, 1023 and 1055). Further, regarding the insertion of "or modified nucleotide analog" (Issue No. 2), this matter is believed to have been rendered moot by the deletion of the offending phrase from each of the four independent claims, 956, 988, 1022 and 1054. Regarding the improper claim amending status identifiers (Issue No. 3), this matter has been corrected in the claim listing provided above. Moreover, the issue regarding "non-nucleotidyl" (Issue No. 4) is also believed to have been rendered moot by the presentation of the claims in this paper which have deleted this limitation altogether. As indicated in the remarks above, the issue of "deoxy-type oligomers" (Issue No. 5) has been corrected in the various dependent claims presented in the above claim listing. The enablement rejection (Issue No. 6) is believed to have been overcome by substituting the term "furanosyl" for "sugar" in claim 956. Finally, the presentation of subject matter reflected in independent claims 956, 988, 1022 and 1054 above, is believed to have overcome the issue of anticipation by Hartman et al. (Issue No. 7).<sup>4</sup>

In view of the presentation of the claims above, Applicants respectfully submit that claims 956-961, 964-968, 970-976, 978-993, 996-1000, 1002-1009, 1011-1027, 1030-1034, 1036-1042, 1044-1059, 1062-1066, 1068-1075 and 1077-1087 are now in allowable condition.

---

<sup>4</sup> With the language of claim 988 before the participants, the anticipation rejection based on the Hartman publication was discussed at some length during the December 16, 2004 interview.

Enz-5(D6)(C2)

Dean L. Engelhardt, et al., Serial No.: 08/479,997 (Filed June 7, 1995)  
Page 35 [Supplemental Amendment To Applicants' September 3, 2004  
Amendment Under 37 C.F.R. §1.116 -- December 28, 2004]

An early indication of allowance of the pending claims is respectfully  
requested.

\* \* \* \* \*

Enz-5(D6)(C2)

Dean L. Engelhardt, et al., Serial No.: 08/479,997 (Filed June 7, 1995)  
Page 36 [Supplemental Amendment To Applicants' September 3, 2004  
Amendment Under 37 C.F.R. §1.116 -- December 28, 2004]

### **SUMMARY AND CONCLUSIONS**

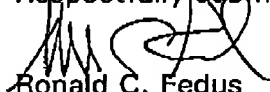
A complete listing of all claims, including pending claims 956-961, 964-968, 970-976, 978-993, 996-1000, 1002-1009, 1011-1027, 1030-1034, 1036-1042, 1044-1059, 1062-1066, 1068-1075 and 1077-1087, is provided above.

No claim fee is believed due for presenting the claim listing above, the number of pending claims being less than the highest number of previously paid for claims. Because a Notice of Appeal was filed concurrently with Applicants' September 3, 2004 Amendment Under 37 C.F.R. §1.116, a Request For Extension Of Time (2 Months) is also being filed concurrently with this paper.

The Patent and Trademark Office is hereby authorized to charge the requisite two month extension fee of \$450.00 to Deposit Account No. 05-1135. No other fees are believed due for filing this paper. In the event that any other fee or fees are due, however, authorization is hereby given to charge the amount of any such fee(s) to Deposit Account No. 05-1135, or to credit any overpayment thereto.

If a telephone conversation would further the prosecution of the present application, Applicants' undersigned attorney request that he be contacted at the number provided below.

Respectfully submitted,



Ronald C. Fedus

Registration No. 32,567

Natalie Bogdanos

Registration No. 51,480

Attorneys for Applicants

ENZO LIFE SCIENCES, INC.  
c/o ENZO BIOCHEM, INC.  
527 Madison Avenue, 9<sup>th</sup> Floor  
New York, NY 10022-4304  
Telephone: (212) 583-0100  
Facsimile: (212) 583-0150

Enz-5(D6)(C2)